

ABSTRACT

A synchronous semiconductor memory device having an on-die termination (ODT) circuit, and an ODT method, satisfy ODT DC and AC parameter specifications and perform an adaptive impedance matching through an external or internal control, by executing an ODT operation synchronized to an external clock. The synchronous semiconductor memory device having a data output circuit for performing a data output operation synchronously to the external clock includes the ODT circuit for generating ODT up and down signals having the same timing as data output up and down signals for the data output operation, to perform the ODT operation.